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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,033	07/11/2003	Taku Amada	240200US2	2698
22850	7590	11/28/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/617,033

Applicant(s)

AMADA ET AL.

Examiner

Hai C. Pham

Art Unit

2861.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-17,26,28 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-10,12-17 and 31-35 is/are allowed.
- 6) ☒ Claim(s) 11,26 and 28 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. The following claims are objected to because of the following informalities:

Claim 1:

- Line 10, "a scanning unit" should read --said polygon mirror-- to conserve the consistency of the claimed terminologies.

Claim 6:

- Line 10, "main-scan directions" should read --main-scan direction--;
- Line 110, "sub-scan directions" should read --sub-scan direction--.

Claim 10:

- Line 9, "said scanning unit" should read --said polygon mirror--.

Claim 13:

- Line 10, "a scanning unit" should read --said polygon mirror--.

Claim 28:

- Line 2, "wherein" should read --comprising--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews (U.S. 5,363,128) in view of Shinpo et al. (JP 1-114465).

Andrews discloses a light scanning apparatus configured to scan a scanned surface (surface of the photoconductive belt 2) with a light beam, comprising a liquid crystal element (optical element 50 having liquid crystal material) configured to deflect the scan line in the sub-scanning direction and thus adjusting the light beam spot position formed on the scanned face, said liquid crystal element being provided between a light source (12) and a polygon mirror (10) (Fig. 1).

Andrews fails to teach the light intensity compensating unit controlling the transmissivity of the adjusting unit.

Shinpo discloses a liquid crystal shutter head comprising a liquid crystal shutter array (7), whose non-uniform light distribution is compensated by adjusting the distribution of amount of transmitted light.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Andrews by controlling the distribution of amount of transmitted light as taught by Shinpo et al. The motivation for doing so would have been to make uniform the amount of transmitted light as suggested by Shinpo et al.

4. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews in view of Hasegawa et al. (U.S. 5,596,430).

Andrews discloses all the basic limitations of the claimed invention including a plurality of light beams scanning the surface of the photoconductive belt (Fig. 1), each having a corresponding adjusting unit (50) but is silent on the maximum deflecting angle of the liquid crystal element.

Hasegawa et al. discloses a light beam deflector for use in a printing system (e.g., laser printer), the deflector having a liquid crystal element against which is applied a proper voltage for deflecting an incident light beam, wherein the maximum deflecting angle of the liquid crystal element is defined by the cell thickness and the variation of the refraction index of the liquid crystal, and wherein such deflecting angle can be set at 95 millidegrees or 1.6 milliradians or 5.5. minutes when the cell thickness is set at 50 microns and the variation of the refraction index is 1.0 (col. 7, lines 9-35).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the liquid crystal element having a controlled angle of deflection in the device of Andrews as taught by Hasegawa et al. The motivation for doing so would have been to provide a high efficiency of usage of the deflected light whose wave surface is not disturbed as suggested by Hasegawa et al. Moreover, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the deflecting angle within the claimed range of 4 minute or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

***Allowable Subject Matter***

5. Claims 1, 3-10, 12-17 and 31-35 are allowed.

***Response to Arguments***

6. Applicant's arguments filed 09/12/05 have been fully considered but they are not persuasive.

With regard to claims 26 and 28, Applicants argued that Hasegawa teaches the deflecting angle without taking the restriction on the cell thickness into consideration. However, Hasegawa clearly indicates that the angle of deflection of each cell is related to the distance between glass substrates or cell thickness, and goes on to give an example of a maximum deflection angle of the cell with a cell thickness of 50 microns (col. 7, lines 9-35). Hasegawa teaches a liquid crystal device with a small angle of deflection for light beam deflection for use in a laser printer such that the efficiency of the light utilization is optimum. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the liquid crystal element having a controlled angle of deflection in the device of Andrews as taught by Hasegawa et al.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM  
PRIMARY EXAMINER

November 26, 2005